ACC.14
TCT@ACC-i2 | innovation in intervention

A1700
JACC April 1, 2014
Volume 63, Issue 12

TCT@ACC-i2: The Interventional Learning Pathway

RE-EXAMINING THE OPERATOR VOLUME-OUTCOMES RELATIONSHIP IN PERCUTANEOUS CORONARY INTERVENTION: A SYSTEMATIC REVIEW

Oral Contributions
Room 201
Saturday, March 29, 2014, 8:30 a.m.-8:40 a.m.

Session Title: PCI Outcomes
Abstract Category: 45. TCT@ACC-i2: Vascular Access and Complications
Presentation Number: 2904-04

Authors: *Jordan Strom, Neil Wimmer, Jason Wasfy, Robert Yeh, Massachusetts General Hospital, Boston, MA, USA*

Background: Growth of centers capable of performing PCI has outpaced population growth in spite of the declining incidence of MI, potentially increasing the proportion of operators falling below minimal volume standards.

Methods: An electronic literature search of MEDLINE and Cochrane Reviews for articles published between 1977 and November, 2012 was performed. Title and abstract review were performed by two authors independently followed by full-text and references review to identify studies examining the association between operator volume and outcomes in PCI. Information was extracted on study design, outcomes, and conclusions. Studies were categorized by methodological quality and outcomes.

Results: Of the 23 studies included in the analysis (11 [48%] higher quality), 14 (61%) evaluated mortality, 7 (30%) evaluated major adverse cardiac events, and 2 (9%) evaluated angiographic success. In total, the studies evaluated 15,907 operators performing 205,214 PCIs (11,077 [5.4%] primary PCI and 194,137 [94.6%] nonemergent PCI) on 1,109,103 patients at 2,456 centers with a mean follow-up of 2.8 years. Studies with higher methodological quality and large sample sizes more often showed a relationship between operator volume and outcomes in PCI across all outcomes. (Table)

Conclusions: Mortality and major adverse cardiac events increase as operator volumes decrease in PCI. Among studies showing a relationship, high volume operators were defined variably, with annual PCIs ranging from >11 to >500.

Table: PCI Volume-Outcomes Relationship in High Quality Studies*

Author	Study Years	Outcome	Effect Size	Comparison Groups	Significant Relationship Concluded
Hannan et al.	1991-1994	Mortality	16% reduction in Mortality	Annualized volume ≥175 vs. <75 PCI/yr	Yes
Jollis et al.	1992	MACE†	22% reduction in MACE	Annualized volume >50 vs. <25 PCI/yr	Yes
Valiki et al.	1995	Mortality	18% reduction in Mortality	Annualized volume ≥75 vs. <75 PCI/yr	No
Kansagra et al.	1996-2001	MACE	58% reduction in MACE	Annualized volume ≥75 vs. <75 PCI/yr	Yes
Mcgrath et al.	1997	Mortality	4% reduction in Mortality	Annualized volume >60 vs. <30 PCI/yr	No
Lindsay et al.	1997	MACE	33% reduction in MACE	Annualized volume >200 vs. <50 PCI/yr	Yes
Hannan et al.	1998-2000	Mortality	30% reduction in Mortality	Annualized volume ≥75 vs. <75 PCI/yr	Yes
Madan et al.	1999-2000	Mortality	2% increase in Mortality	Annualized volume ≥100 vs. <100 PCI/yr	No
Srinivas et al.	2000-2002	Mortality	39% reduction in Mortality	Annualized volume >25 vs. ≤ 25 PCI/yr	Yes
Moscucci et al.	2002	MACE	44% reduction in MACE	Annualized volume ≥ 207 vs. <34 PCI/yr	Yes

*Studies graded from 0-4 on adjustment for risk, clustering of outcomes by hospital and provider, and time trends. Studies with grades 3-4 considered to be high quality.

† Major Adverse Cardiac Events.